

COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Valley Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Battle Creek Landfill
Page County, Virginia
Permit No. VRO81380

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Page County has applied for a Title V Operating Permit for its landfill in Page County, Virginia. The Department has reviewed the application and has prepared a Title V Operating Permit.

Engineer/Permit Contact:

Air Permit Manager:

Deputy Regional Director:

FACILITY INFORMATION

Permittee

Page County
219 Landfill Drive
Luray, Virginia 22835

Facility

Battle Creek Landfill
219 Landfill Drive
Luray, Virginia 22835

Plant ID No.: 51-139-0031

SOURCE DESCRIPTION

NAICS Code 562212 (Refuse Systems)

The Battle Creek Landfill is a municipal solid waste (MSW) management facility located at 219 Landfill Drive, Luray, Virginia.

Battle Creek Landfill was permitted as a Solid Waste Facility under the Virginia Solid Waste Disposal Regulations on February 21, 1995 and began operations under Solid Waste Permit #579 in January 1999. The design capacity of the landfill under the Solid Waste Permit #579 was 2.886 million m³. The initial design capacity report (DCR) for the facility was received on October 16, 2000. The DCR indicated that the capacity of the landfill was 4.40 million m³. This increase in design capacity in the DCR was based on the assumption that a Solid Waste Permit amendment request to increase the design capacity would be approved by DEQ Solid Waste Division. A minor new source review (NSR) permit was issued to the subject facility on April 23, 2001, for the construction of a MSW landfill with a design capacity not to exceed 4.40 million m³. It was later discovered that DEQ Solid Waste Division never approved the increase in design capacity (to 4.40 million m³) requested by the facility. The operations of this landfill continued until March 2004 at which time the Solid Waste Permit for the landfill was revoked by DEQ. The facility re-opened in September 2005 in accordance with the June 10, 2005 Order issued by DEQ. One of the conditions of the Order required that Page County submit a Solid Waste Permit amendment request so that the waste placed above the final permitted grades could remain in place. The Solid Waste Permit amendment required by the DEQ Order was submitted in December 2005, and is currently being reviewed by DEQ Solid Waste Division. As a result of this Solid Waste Permit amendment, the permitted capacity of the landfill will be 3.704 million m³ (2.769 million megagrams). On November 20, 2006, the facility's minor NSR permit dated April 23, 2001 was amended to reflect the permitted design capacity.

The permitted design capacity of the Battle Creek Landfill is greater than 2.5 million m³ and 2.5 million megagrams (See Attachment A). Therefore, the landfill is regulated according to New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills (40 CFR 60 Subpart WWW). As stated in 40 CFR §60.752 (b), landfills above the 2.5 million m³ and 2.5 million megagrams design capacity are subject to Title V permitting requirements. This source is located in an attainment area for all pollutants.

COMPLIANCE STATUS

The facility is inspected once a year. The facility was last inspected on November 29, 2006. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. The facility has not been found to be in violation of any state or federal applicable requirements at this time.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Table I. Significant Emission Units

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity	Pollution Control Device Description (PCD)	PCD ID	Pollutant Controlled	Applicable Permit Date
Landfills							
EU-1	-	MSW Landfill	2.769 million Mg	-	-	-	04/23/2001 Permit, as amended 11/20/2006
Landfill Roads							
EU-2	-	Landfill Roads	-	-	-	-	04/23/2001 Permit, as amended 11/20/2006

EMISSIONS INVENTORY

A copy of the 2005 annual emission update is attached as Attachment B. Emissions are summarized in the following tables:

Table II. 2005 Annual Emissions

2005 Pollutant Emissions (Plant wide Total)	
Pollutant	Tons Emitted
<i>Criteria Pollutants</i>	
PM-10	2.1
VOC	12
NO _x	-
CO	-
SO ₂	-
<i>Non Methane Organic Compounds (NMOC)</i>	
NMOC	28
<i>Hazardous Air Pollutants (HAP)</i>	
Total HAP	4.1

EMISSION UNIT APPLICABLE REQUIREMENTS – (EU-1)

Limitations

Battle Creek Landfill is subject to 40 CFR 60, Subpart WWW - New Source Performance Standards (NSPS) for Municipal Solid Waste Landfills. The following limitations are state BACT and/or other applicable requirements from the minor NSR permit dated April 23, 2001, as amended November 20, 2006 which includes requirements that are based on 40 CFR Part 60, Subpart WWW requirements. Please note that the condition numbers are from the permit dated April 23, 2001, as amended November 20, 2006. A copy of the permit is enclosed as Attachment C.

Condition 3: design capacity shall not exceed 2.769 million megagrams and 3.704 million cubic meters

Condition 4: landfill gas (LFG) collection and control system requirements in the event NMOC emission rate would ever be equal to or greater than 50 Mg/yr

Condition 19: solid waste permit amendment requirement in the event landfill gas (LFG) collection and control system is required

Condition 20: TV permit amendment requirement in the event landfill gas (LFG) collection and control system is required

Being subject to the NSPS means that Battle Creek Landfill is also subject to 40 CFR 60, Subpart A - General Provisions. All applicable limitations from Subparts A and WWW have been included in the permit. Note that Condition 4 does not currently require the facility to install a LFG collection and control system. However, Condition 4 requires the facility to submit a collection and control design plan and install a collection and control system in compliance with 40 CFR §60.752 (b)(2) in the event NMOC emission rate would ever be equal to or greater than 50 Mg/yr.

40 CR 60 Subpart WWW includes requirements applicable to the operation and monitoring of LFG collection and control systems (e.g., 40 CFR §60.753: Operational Standards for collection and control systems; §60.755: Compliance Provisions, and §60.756: Monitoring of Operations). The requirements have not been included in the Title V permit because the facility is not currently required to operate a collection and control system. If in the future the permittee is required to install a LFG collection and control system (i.e., if its NMOC emission rate becomes equal to or greater than 50 Mg/yr), the permittee is required to apply for an amendment to the Title V permit. The amended permit would include the applicable Subpart WWW operational and monitoring requirements.

With respect to the NSPS, the facility's only applicable requirements at this time are monitoring, recordkeeping and reporting.

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Conditions 7 and 14 of the minor NSR permit dated April 23, 2001, as amended November 20, 2006, have been included in the permit. These requirements, derived from 40 CFR 60 Subpart WWW, meet Part 70 monitoring requirements for the landfill.

As required by Condition 14 of the minor NSR permit, the permittee shall maintain records including but not limited to the design capacity of the landfill, the current amount of solid waste in place, and the year-by-year waste acceptance rate.

As required by Condition 7 of the minor NSR permit, actual emissions from the operation of the landfill shall be calculated using either of the following equations (Equation 1 or 2):

$$M_{NMOC} = \sum_{i=1}^n 2kL_O M_i (e^{-kt_i})(C_{NMOC})(3.6 \times 10^{-9})$$

.....Equation 1

M_{NMOC}	= total NMOC emission rate from the landfill, megagrams per year
k	= methane generation rate constant, year ⁻¹
L_O	= methane generation potential, cubic meters per megagram solid waste

M_i	= mass of solid waste in the i^{th} section, megagrams
t_i	= age of the i^{th} section, years
C_{NMOC}	= concentration of NMOC, parts per million by volume as hexane
3.6×10^{-9}	= conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for M_i if documentation of the nature and amount of such wastes is maintained.

$$M_{\text{NMOC}} = 2L_o R(e^{-kc} - e^{-kt})(C_{\text{NMOC}})(3.6 \times 10^{-9})$$

.....Equation 2

M_{NMOC}	= mass emission rate of NMOC from the landfill, megagrams per year
L_o	= methane generation potential, cubic meters per megagram solid waste
R	= average annual acceptance rate, megagrams per year
k	= methane generation rate constant, year ⁻¹
t	= age of the landfill, years
C_{NMOC}	= concentration of NMOC, parts per million by volume as hexane
c	= time since closure, years (for an active landfill $c = 0$ and $e^{-kc} = 1$)
3.6×10^{-9}	= conversion factor

The mass of nondegradable solid waste may be subtracted from the average annual acceptance rate when calculating a value for R , if documentation of the nature and amount of such wastes is maintained.

Compliance Assurance Monitoring (CAM) Applicability

As per 40 CFR Part 64, Compliance Assurance Monitoring (CAM), emission limitations or standards proposed after November 15, 1990 pursuant to Section 111 or 112 are exempt from CAM (40 CFR §64.2 (b)(1)). All applicable monitoring requirements from Subpart WWW have been included in the permit. Since Subpart WWW was promulgated on March 1996 under the authority of Section 111 of the New Source Performance Standards (NSPS), the emission limitations or standards derived from Subpart WWW are exempt from CAM and no additional monitoring has been incorporated into the Title V permit.

Testing

The permit requires testing of the site-specific NMOC concentration using the procedures described in 40 CFR 60, Subpart WWW. The Title V permit includes the requirement that the permittee use appropriate method(s) in accordance with procedures approved by DEQ if further testing for compliance purposes is performed.

Reporting Requirements

The reporting required in the Title V permit has been incorporated from Conditions 15, 16, 17, 18, 21 and 22 of the minor NSR permit dated April 23, 2001, as amended November 20, 2006. Since the NMOC emission rate is less than 50 Mg/yr, 40 CFR 60 Subpart WWW reporting requirements related to a collection and control system have not been incorporated into the permit. However, Conditions 16 and 17 requires the facility to submit a collection and control design plan and install a collection and control system in compliance with 40 CFR §60.752 (b)(2) in the event NMOC emission rate would ever equal to or greater than 50 Mg/yr.

Streamlined Requirements

The following applicable requirements have not been included for the reasons provided:

40 CFR §60.757 (a) - Initial Design Capacity Submittal Requirement

On October 16, 2000, the facility submitted the initial design capacity report. This report also fulfilled the requirements of the notification of the date construction is commenced

Per 40 CFR §60.7 (a)(1). The revised design capacity report was submitted on February 3, 2007.

40 CFR §60.757 (b) - Initial Non Methane Organic Compounds (NMOC) Emission Rate Report Requirement

On November 13, 2002, the facility submitted a NMOC emission rate report. As per the report, the 2001 emission estimate for the landfill was 75 Mg/yr. Since the NMOC emission rate exceeded 50 Mg/yr, the facility was required to determine a site-specific NMOC concentration and recalculate the NMOC emission rate under Tier 2 procedures, **or** submit a collection and control system design plan prepared by a professional engineer within one year of the report and comply with 40 CFR §60.752 (b)(2). The facility notified DEQ that Tier 2 sampling would be done and a revised NMOC emission rate would be submitted.

40 CFR §60.757 (c)(1) - Non Methane Organic Compounds (NMOC) Emission Rate Report Requirement under Tier 2 sampling

On April 2005, the facility determined the site-specific NMOC concentration and recalculated the NMOC emission rate. The site-specific NMOC concentration and Tier 2 NMOC emission rate report were submitted on June 14, 2005. As per the report, the site-specific NMOC concentration was determined to be 650 ppmv as hexane and 2004 NMOC emission rate for the landfill was 15.2 Mg/yr. Since the NMOC emission rate

was under 50 Mg/yr, the facility is not required to submit a collection and control system design plan at this time.

Condition 9 of the minor NSR permit dated April 23, 2001, as amended November 20, 2006

This condition has not been included as all applicable requirements from 40 CFR 60, Subpart WWW requirements have been included in the TV permit.

EMISSION UNIT APPLICABLE REQUIREMENTS - (Landfill Roads)

The requirements related to landfill roads are listed under “Facility Wide Conditions” in the permit. The “Facility Wide Conditions” in the permit also includes some of the fugitive dust conditions related to landfill work, i.e., cell construction, daily cover application, etc.

Limitations

The following limitations are state BACT and other applicable requirements from the minor NSR permit dated April 23, 2001, as amended November 20, 2006. Please note that the condition numbers are from the permit dated April 23, 2001, as amended November 20, 2006. A copy of the permit is enclosed as Attachment C.

Condition 5: fugitive dust emission control requirements

Condition 6: dust control plan requirement

Condition 8: visible emissions limit

Monitoring and Recordkeeping

The monitoring and recordkeeping requirements in Conditions 13 and 14 of the minor NSR permit dated April 23, 2001, as amended November 20, 2006, have been included in the permit.

In lieu of conducting periodic evaluations using EPA Method 9 to demonstrate compliance with the facility-wide visible emission limit, the permittee shall perform a daily visual survey of the trafficable roads at the site and landfill activities for sources of excessive emissions. The reason for not requiring EPA Method 9 is that there is no stack in the landfill to perform the test. The presence of excessive emissions requires further investigation as to the cause of the emissions and timely corrective action is required. All observations and corrective actions taken are to be logged and recorded. These records are to be available on-site for inspection by the DEQ and must be current for the most recent five (5) years.

There is reasonable assurance that violations of the visible emission standard should not occur if the permittee complies with the permit condition to mitigate fugitive dust, implements the operating procedures included in the dust control plan, performs a daily visible emission survey and conducts timely corrective actions as needed.

Compliance Assurance Monitoring (CAM)

CAM does not apply to the landfill roads because the landfill roads do not use a control device to achieve compliance with the emission limitations.

Testing

The permit does not require source emission tests. The permit requires that the permittee use appropriate method(s) in accordance with procedures approved by DEQ if further testing for compliance purposes is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

No specific reporting has been included.

Streamlined Requirements

There are no streamlined requirements.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

STATE-ONLY APPLICABLE REQUIREMENTS

Battle Creek Landfill did not identify any state-only requirements in their application. Therefore, no state-only requirements have been included in the permit.

FUTURE APPLICABLE REQUIREMENTS

On September 8, 2006 EPA proposed amendments (71 FR 53272) to 40 CFR 60, Subpart WWW, New Source Performance Standards (NSPS) for Municipal Solid Waste. In summary the amendments will clarify who is responsible for compliance activities where multiple parties are involved in the ownership or operation of the landfill gas collection, control, and/or treatment systems. In addition, the amendments will revise the NSPS requirements regarding startup, shutdown, malfunction, and routine maintenance. Final action on the amendments is expected by January 2008, as reported in EPA's Unified Agenda (72FR23208) published in the Federal Register on April 30, 2007.

INAPPLICABLE REQUIREMENTS

This facility is not subject to 40 CFR Part 63, Subpart AAAA - National Emission Standards for Hazardous Air Pollutants for Municipal Solid Waste Landfills. This standard does not apply because this facility is not (1) a major source of hazardous air pollutants (HAPs); (2) collocated with a major source of HAPs; (3) an area source with a design capacity greater than or equal to 2.5 million m³ and 2.5 million Mg with estimated uncontrolled NMOC emissions equal to or greater than 50 Mg/yr; or (4) an active area source landfill with a design capacity greater than or equal to 2.5 million m³ and 2.5 million Mg that operates an anaerobic bioreactor.

The facility is not subject to 9 VAC 5 Chapter 40, Article 43 (Rule 4-43, Emission Standards for Municipal Solid Waste Landfills) because Rule 4-43 applies only to MSW landfills that commenced construction before May 30, 1991. Battle Creek Landfill commenced construction after 1991.

COMPLIANCE PLAN

Battle Creek Landfill is currently in compliance with all applicable requirements. No compliance plan was included in the application or in the permit.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Table III Insignificant Emission Units

Emission Unit No.	Emission Unit Description	Citation ¹	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
EU-6	Leachate Storage Tank	9 VAC 5-80-720 B	VOC	-
EU-4	Two (2) Fuel Storage Tanks	9 VAC 5-80-720 B	VOC	-
EU-10	Waste Oil Burner	9 VAC 5-80-720 B	VOC	-

¹The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. Therefore, all portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION

A public notice regarding the draft permit was placed in the Page News & Courier on April 26, 2007. EPA was sent a copy of the draft permit and notified of the public notice on April 26, 2007. West Virginia, the only affected state, was sent a copy of the public notice in e-mail dated April 26, 2007. All persons on the Title V mailing list were also sent a copy of the public notice in e-mail dated April 26, 2007. Public comments were accepted from April 27, 2007 to May 26, 2007. No comments were received from the public. Based upon EPA's recent comment on draft Title V permit for Frederick County Regional Landfill, the SOB for this permit action was revised to include future applicable requirements 40 CFR 60, Subpart WWW, New Source Performance Standards (NSPS) for Municipal Solid Waste as a result of proposed amendment. EPA was sent the proposed permit and SOB on May 29, 2007. EPA's 45 day comment period ended on July 13, 2007. No comments were received from the EPA.

ATTACHMENTS

The following information is attached:

ATTACHMENT A: Design Capacity of the Landfill

ATTACHMENT B: 2005 Annual Emissions Update

ATTACHMENT C: Minor NSR Permit dated 04/23/2001 as amended 11/20/2006

ATTACHMENT A

Design Capacity of the Landfill

ATTACHMENT B
2005 Annual Emissions Update

ATTACHMENT C
Minor NSR Permit dated 04/23/2001 as amended 11/20/2006

ATTACHMENT A
Design Capacity of the Landfill

**BATTLE CREEK LANDFILL
PHASE CAPACITY
6-Feb-07**

PHASE	ESTIMATED CAPACITY FOR WASTE AND DAILY COVER (CY)¹	ESTIMATED CAPACITY FOR WASTE ONLY (TONS)²	ESTIMATED CAPACITY FOR WASTE ONLY (MG)³
I	2,697,540	1,699,450	1,541,401
II	943,430	594,361	539,085
III	675,440	425,527	385,953
IV	529,200	333,396	302,390
TOTAL	4,845,610	3,052,734	2,768,830

1. The Estimated Capacity of Phase I is based on total airspace for final grades proposed under the December 2005 Solid Waste Phase I Permit Amendment (Amendment No. 7). The estimated capacity in Phases II-IV is from the current Operations Manual, prepared by Olver Inc., dated October 25, 2000.

2. Assumed that 10% of volume consumed by daily cover. Density is assumed to be 1,400 pounds/CY. Therefore, estimated capacity in tonnage is 3,052,734 tons $[(4,845,610 \text{ CY airspace}) * (0.9 \text{ CY waste/CY airspace}) * (1400 \text{ lb/CY}) * (1 \text{ ton}/2000 \text{ lb})]$.

3. To calculate Mg, multiply tons by 0.907

ATTACHMENT B
2005 Annual Emissions Update



VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

EMISSION STATEMENT CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering and evaluating the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (see reverse side for instructions)

SIGNATURE: _____

DATE: _____

4/10/06

PRINTED NAME: Henry Mikus

TITLE: Director of Public Works

COMPANY: County of Page, Department of Public Works

REGISTRATION NUMBER: 81380

TELEPHONE NUMBER: (540)743-3854



VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

2005 EMISSION STATEMENT

Please correct any errors in the information below (cross out & replace)

FACILITY NAME BATTLE CREEK LANDFILL	REGISTRATION # 81380	CONTACT PERSON HENRY MIKUS	
LOCATION 806 US HIGHWAY 340		JURISDICTION COUNTY OF PAGE	
MAILING ADDRESS 117 SOUTH COURT STREET	MAILING CITY AND STATE LURAY, VA	ZIPCODE 22835	
OWNER NAME COUNTY OF PAGE	TELEPHONE NUMBER 5407433854	PRIMARY NAICS CODE 562212	For Agency Use Only E, T5

FACILITY TOTALS (Sum emissions from attached pages)

	ANNUAL	OZONE SEASON
TOTAL VOC EMISSIONS FOR 2005	12.0 TONS/YR	LBS/DAY
TOTAL NO _x EMISSIONS FOR 2005	TONS/YR	LBS/DAY
TOTAL SO ₂ EMISSIONS FOR 2005	TONS/YR	NA
TOTAL PM ₁₀ EMISSIONS FOR 2005	0.6 TONS/YR	NA
TOTAL PB EMISSIONS FOR 2005	TONS/YR	NA
TOTAL TRS EMISSIONS FOR 2005	0.8 TONS/YR	NA
TOTAL TNMOC EMISSIONS FOR 2005	28.0 TONS/YR	NA
TOTAL non-VOC/non-PM HAP EMISSIONS FOR 2005	1.1 TONS/YR	NA
TOTAL CO EMISSIONS FOR 2005	TONS/YR	NA
TOTAL PM _{2.5} EMISSIONS FOR 2005	0.1 TONS/YR	NA
TOTAL NH3 EMISSIONS FOR 2005	TONS/YR	NA

PLEASE ATTACH "ANNUAL UPDATE" FORM.

PLEASE ATTACH "EMISSION STATEMENT CERTIFICATION" with appropriate signature.

2003 EMISSION CALCULATIONS
OPTION I: EMISSION FACTOR METHOD (continued)

REGISTRATION #: **81380** STACK NO.: **001** POINT NO. **001** SEGMENT NO. **01** SCC NO. **50100402**

		ANNUAL		PEAK OZONE SEASON (JUNE, JULY, AUGUST)	
THRUPUT (with units)		6,246 tons of MSW			
NO. OPERATING DAYS		365 days			
NO. OPERATING HOURS PER DAY		24 hours			
DAILY THRUPUT (with units) = Thruput, days		N/A			
VOC EMISSION FACTOR (with units) = EF		254 ppmv			
Emission Factor source ¹	Control Efficiency basis ²	O - Tier II Testing	N/A		
VOC CONTROL DEVICE CODE ³		000			
Avg. VOC CONTROL EFFICIENCY ⁴ = CE		0			
VOC EMISSIONS ⁵		12.0 tons of VOC per yr			
NOx EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
NOx CONTROL DEVICE CODE ³					
Avg. NOx CONTROL EFFICIENCY ⁴ = CE		%		%	
NOx EMISSIONS ⁵		tons NOx per yr		lbs NOx per day	
SO2 EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
FUEL PARAMETER (% ash or % sulfur) = FP		%		%	
SO2 CONTROL DEVICE CODE ³					
Avg. SO2 CONTROL EFFICIENCY ⁴ = CE		%		%	
SO2 EMISSIONS ⁵		tons SO2 per yr		lbs SO2 per day	
PM10 EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
FUEL PARAMETER (% ash or % sulfur) = FP		%		%	
PM10 CONTROL DEVICE CODE ³					
Avg. PM10 CONTROL EFFICIENCY ⁴ = CE		%		%	
PM10 EMISSIONS ⁵		tons PM10 per yr		lbs PM10 per day	
PB Emission Factor (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
PB CONTROL DEVICE CODE ³					
Avg. PB CONTROL EFFICIENCY ⁴ = CE		%		%	
PB EMISSIONS ⁵		tons PB per yr		lbs PB per day	

1. AP-42; CEMS; ST = Stack test; F = Federal factor (EPA standard factor); O = Other (describe on separate sheet; use subject to DEQ approval)
2. A = Tested (by EPA Reference Method); B = Test (Other); C = Material Balance; D = Design; O = Other (describe on separate sheet)
3. See three digit device control codes listed in appendix
4. Note control efficiency will be zero if there is no control device OR the emission factor accounts for controls (i.e. EF is identified to be "with controls")
5. Annual Emissions = ANNUAL THRUPUT X EF X FP X (1/2000) X (100 - CE)/100; Ozone Emissions = DAILY THRUPUT X EF X FP X (100 - CE)/100

2003 EMISSION CALCULATIONS
OPTION I: EMISSION FACTOR METHOD (continued)

REGISTRATION #: **81380**

STACK NO.: **001** POINT NO. **001**

SEGMENT NO. **01**

SCC NO. **50100402**

		ANNUAL		PEAK OZONE SEASON (JUNE, JULY, AUGUST)	
THRUPUT (with units)		6,246 tons of MSW			
NO. OPERATING DAYS		365 days		days	
NO. OPERATING HOURS PER DAY		24 hours		hours	
DAILY THRUPUT (with units) = Thruput, days		NA		per day	
TRS EMISSION FACTOR (with units) = EF		46.9 ppmv			
Emission Factor source ¹	Control Efficiency basis ²	AP-42	N/A		
TRS CONTROL DEVICE CODE ³		000			
Avg. TRS CONTROL EFFICIENCY ⁴ = CE		0		%	
TRS EMISSIONS ⁵		0.8 tons TRS per yr		lbs TRS per day	
TNMOC EMISSION FACTOR (with units) = EF		650 ppmv			
Emission Factor source ¹	Control Efficiency basis ²	O - Tier II Testing	N/A		
TNMOC CONTROL DEVICE CODE ³		000			
Avg. TNMOC CONTROL EFFICIENCY ⁴ = CE		0		%	
TNMOC EMISSIONS ⁵		28.0 tons TNMOC per yr		lbs TNMOC per day	
CO EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
CO CONTROL DEVICE CODE ³					
Avg. CO CONTROL EFFICIENCY ⁴ = CE		%		%	
CO EMISSIONS ⁵		tons per yr		lbs per day	
PM2.5 EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
FUEL PARAMETER (% ash or % sulfur) = FP		%		%	
PM2.5 CONTROL DEVICE CODE ³					
Avg. PM2.5 CONTROL EFFICIENCY ⁴ = CE		%		%	
PM2.5 EMISSIONS ⁵		tons per yr		Lbs per day	
NH3 Emission Factor (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
NH3 CONTROL DEVICE CODE ³					
Avg. NH3 CONTROL EFFICIENCY ⁴ = CE		%		%	
NH3 EMISSIONS ⁵		tons per yr		lbs per day	

1. AP-42; CEMS; ST = Stack test; F = Federal factor (EPA standard factor); O = Other (describe on separate sheet; use subject to DEQ approval)

2. A = Tested (by EPA Reference Method); B = Test (Other); C = Material Balance; D = Design; O = Other (describe on separate sheet)

3. See three digit device control codes listed in appendix

4. Note control efficiency will be zero if there is no control device OR the emission factor accounts for controls (i.e. EF is identified to be "with controls")

5. Annual Emissions = ANNUAL THRUPUT X EF X FP X (1/2000) X (100 - CE)/100; Ozone Emissions = DAILY THRUPUT X EF X FP X (100 - CE)/100

2003 EMISSION CALCULATIONS
OPTION I: EMISSION FACTOR METHOD (continued)

REGISTRATION #: 81380

STACK NO.: 001 POINT NO. 001

SEGMENT NO. 01

SCC NO. 50100402

		ANNUAL		PEAK OZONE SEASON (JUNE, JULY, AUGUST)
THRUPUT (with units)		6.246 tons of MSW		
NO. OPERATING DAYS		365 days		Days
NO. OPERATING HOURS PER DAY		24 hours		Hours
DAILY THRUPUT (with units) = Thruput, days		NA		per day
HAP EMISSION FACTOR (with units) = EF				
Emission Factor source ¹	Control Efficiency basis ²	O	N/A	
HAP CONTROL DEVICE CODE ³		000		
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%
HAP (TOTAL) EMISSIONS ⁵		4.7 tons per yr		lbs per day
HAP EMISSION FACTOR (with units) = EF		42.0 ppmv		
Emission Factor source ¹	Control Efficiency basis ²	AP-42	N/A	
HAP CONTROL DEVICE CODE ³		000		
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%
HAP (1782-50-6) EMISSIONS ⁵		0.8 tons per yr		lbs per day
HAP EMISSION FACTOR (with units) = EF		1.448 ppmv		
Emission Factor source ¹	Control Efficiency basis ²	O	N/A	
HAP CONTROL DEVICE CODE ³		000		
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%
HAP (106-46-7) EMISSIONS ⁵		0.1 tons per yr		lbs per day
HAP EMISSION FACTOR (with units) = EF		3.395 ppmv		
Emission Factor source ¹	Control Efficiency basis ²	O	N/A	
HAP CONTROL DEVICE CODE ³		000		
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%
HAP (75-09-2) EMISSIONS ⁵		0.2 tons per yr		lbs per day
HAP EMISSION FACTOR (with units) = EF		6.789 ppmv		
Emission Factor source ¹	Control Efficiency basis ²	O	N/A	
HAP CONTROL DEVICE CODE ³		000		
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%
HAP (100-41-4) EMISSIONS ⁵		0.4 tons per yr		lbs per day
HAP Emission Factor (with units) = EF		2.063 ppmv		
Emission Factor source ¹	Control Efficiency basis ²	O	N/A	
HAP CONTROL DEVICE CODE ³		000		
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%
HAP (100-54-3) EMISSIONS ⁵		0.1 tons per yr		lbs per day

1. AP-42; CEMS; ST = Stack test; F = Federal factor (EPA standard factor); O = Other (describe on separate sheet; use subject to DEQ approval)
2. A = Tested (by EPA Reference Method); B = Test (Other); C = Material Balance; D = Design; O = Other (describe on separate sheet)
3. See three digit device control codes listed in appendix
4. Note control efficiency will be zero if there is no control device OR the emission factor accounts for controls (i.e. EF is identified to be "with controls")
5. Annual Emissions = ANNUAL THRUPUT X EF X FP X (1/2000) X (100 - CE)/100; Ozone Emissions = DAILY THRUPUT X EF X FP X (100 - CE)/100

2003 EMISSION CALCULATIONS
OPTION I: EMISSION FACTOR METHOD (continued)

REGISTRATION #: **81380**

STACK NO.: **001** POINT NO. **001**

SEGMENT NO. **01**

SCC NO. **50100402**

		ANNUAL		PEAK OZONE SEASON (JUNE, JULY, AUGUST)	
THRUPUT (with units)		6,246 tons of MSW			
NO. OPERATING DAYS		365 days		Days	
NO. OPERATING HOURS PER DAY		24 hours		Hours	
DAILY THRUPUT (with units) = Thruput, days		NA		per day	
HAP EMISSION FACTOR (with units) = EF		12.694 ppmv			
Emission Factor source ¹	Control Efficiency basis ²	O	N/A		
HAP CONTROL DEVICE CODE ³		000			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%	
HAP (78-93-3) EMISSIONS ⁵		0.5 tons per yr		lbs per day	
HAP EMISSION FACTOR (with units) = EF		1.193 ppmv			
Emission Factor source ¹	Control Efficiency basis ²	O	N/A		
HAP CONTROL DEVICE CODE ³		000			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%	
HAP (127-18-4) EMISSIONS ⁵		0.1 tons per yr		lbs per day	
HAP EMISSION FACTOR (with units) = EF		25.405 ppmv			
Emission Factor source ¹	Control Efficiency basis ²	O	N/A		
HAP CONTROL DEVICE CODE ³		000			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%	
HAP (108-88-3) EMISSIONS ⁵		1.3 tons per yr		lbs per day	
HAP EMISSION FACTOR (with units) = EF		15.582 ppmv			
Emission Factor source ¹	Control Efficiency basis ²	O	N/A		
HAP CONTROL DEVICE CODE ³		000			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		0 %		%	
HAP (1330-20-7) EMISSIONS ⁵		0.9 tons per yr		lbs per day	
HAP EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
HAP CONTROL DEVICE CODE ³					
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		%		%	
HAP (- -) EMISSIONS ⁵		tons per yr		lbs per day	
HAP Emission Factor (with units) = EF		ppmv			
Emission Factor source ¹	Control Efficiency basis ²				
HAP CONTROL DEVICE CODE ³					
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		%		%	
HAP (- -) EMISSIONS ⁵		tons per yr		lbs per day	

1. AP-42; CEMS; ST = Stack test; F = Federal factor (EPA standard factor); O = Other (describe on separate sheet; use subject to DEQ approval)
2. A = Tested (by EPA Reference Method); B = Test (Other); C = Material Balance; D = Design; O = Other (describe on separate sheet)
3. See three digit device control codes listed in appendix
4. Note control efficiency will be zero if there is no control device OR the emission factor accounts for controls (i.e. EF is identified to be "with controls")
5. Annual Emissions = ANNUAL THRUPUT X EF X FP X (1/2000) X (100 - CE)/100; Ozone Emissions = DAILY THRUPUT X EF X FP X (100 - CE)/100

2003 EMISSION CALCULATIONS
OPTION I: EMISSION FACTOR METHOD (continued)

REGISTRATION #: **81380**

STACK NO.: **002** POINT NO. **002**

SEGMENT NO. **01**

SCC NO. **50100402**

		ANNUAL		PEAK OZONE SEASON (JUNE, JULY, AUGUST)	
THRUPUT (with units)		3655.7 Vehicle Miles			
NO. OPERATING DAYS		87 days			
NO. OPERATING HOURS PER DAY		24 hours			
DAILY THRUPUT (with units) = Thruput, days		NA			
VOC EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
VOC CONTROL DEVICE CODE ³					
Avg. VOC CONTROL EFFICIENCY ⁴ = CE					
VOC EMISSIONS ⁵		tons VOC per yr			
NOx EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
NOx CONTROL DEVICE CODE ³					
Avg. NOx CONTROL EFFICIENCY ⁴ = CE					
NOx EMISSIONS ⁵		tons NOx per yr			
SO2 EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
FUEL PARAMETER (% ash or % sulfur) = FP					
SO2 CONTROL DEVICE CODE ³					
Avg. SO2 CONTROL EFFICIENCY ⁴ = CE					
SO2 EMISSIONS ⁵		tons SO2 per yr		lbs SO2 per day	
PM10 EMISSION FACTOR (with units) = EF		varies			
Emission Factor source ¹	Control Efficiency basis ²	AP-42	N/A		
FUEL PARAMETER (% ash or % sulfur) = FP		N/A %			
PM10 CONTROL DEVICE CODE ³		061			
Avg. PM10 CONTROL EFFICIENCY ⁴ = CE		Assumed 0.0 %			
PM10 EMISSIONS ⁵		0.6 tons PM10 per yr		lbs PM10 per day	
PB Emission Factor (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
PB CONTROL DEVICE CODE ³					
Avg. PB CONTROL EFFICIENCY ⁴ = CE					
PB EMISSIONS ⁵		tons PB per yr		lbs PB per day	

1. AP-42; CEMS; ST = Stack test; F = Federal factor (EPA standard factor); O = Other (describe on separate sheet; use subject to DEQ approval)
2. A = Tested (by EPA Reference Method); B = Test (Other); C = Material Balance; D = Design; O = Other (describe on separate sheet)
3. See three digit device control codes listed in appendix
4. Note control efficiency will be zero if there is no control device OR the emission factor accounts for controls (i.e. EF is identified to be "with controls")
5. Annual Emissions = ANNUAL THRUPUT X EF X FP X (1/2000) X (100 - CE)/100; Ozone Emissions = DAILY THRUPUT X EF X FP X (100 - CE)/100

2003 EMISSION CALCULATION
OPTION I: EMISSION FACTOR METHOD (continued)

REGISTRATION #: **81380**

STACK NO.: **002** POINT NO. **002**

SEGMENT NO. **01**

SCC NO. **50100402**

		ANNUAL		PEAK OZONE SEASON (JUNE, JULY, AUGUST)	
THRUPUT (with units)		3655.7 Vehicle Miles			
NO. OPERATING DAYS		87 days		days	
NO. OPERATING HOURS PER DAY		24 hours		hours	
DAILY THRUPUT (with units) = Thruput, days		NA		per day	
TRS EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
TRS CONTROL DEVICE CODE ³					
Avg. TRS CONTROL EFFICIENCY ⁴ = CE		%		%	
TRS EMISSIONS ⁵		tons TRS per year		lbs TRS per day	
TNMOC EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
TNMOC CONTROL DEVICE CODE ³					
Avg. TNMOC CONTROL EFFICIENCY ⁴ = CE		%		%	
TNMOC EMISSIONS ⁵		tons TNMOC per yr		lbs TNMOC per day	
CO EMISSION FACTOR (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
CO CONTROL DEVICE CODE ³					
Avg. CO CONTROL EFFICIENCY ⁴ = CE		%		%	
CO EMISSIONS ⁵		tons per yr		lbs per day	
PM2.5 EMISSION FACTOR (with units) = EF		varies			
Emission Factor source ¹	Control Efficiency basis ²	AP-42	N/A		
FUEL PARAMETER (% ash or % sulfur) = FP		N/A %		%	
PM2.5 CONTROL DEVICE CODE ³		061			
Avg. PM2.5 CONTROL EFFICIENCY ⁴ = CE		Assumed 0.0%		%	
PM2.5 EMISSIONS ⁵		0.1 tons per yr		Lbs per day	
NH3 Emission Factor (with units) = EF					
Emission Factor source ¹	Control Efficiency basis ²				
NH3 CONTROL DEVICE CODE ³					
Avg. NH3 CONTROL EFFICIENCY ⁴ = CE		%		%	
NH3 EMISSIONS ⁵		tons per yr		lbs per day	

1. AP-42; CEMS; ST = Stack test; F = Federal factor (EPA standard factor); O = Other (describe on separate sheet; use subject to DEQ approval)

2. A = Tested (by EPA Reference Method); B = Test (Other); C = Material Balance; D = Design; O = Other (describe on separate sheet)

3. See three digit device control codes listed in appendix

4. Note control efficiency will be zero if there is no control device OR the emission factor accounts for controls (i.e. EF is identified to be "with controls")

5. Annual Emissions = ANNUAL THRUPUT X EF X FP X (1/2000) X (100 - CE)/100; Ozone Emissions = DAILY THRUPUT X EF X FP X (100 - CE)/100

2003 EMISSION CALCULATION
OPTION I: EMISSION FACTOR METHOD (continued)

REGISTRATION #: **81380**

STACK NO.: **002** POINT NO. **002**

SEGMENT NO. **01**

SCC NO. **50100402**

		ANNUAL	PEAK OZONE SEASON (JUNE, JULY, AUGUST)
THRUPUT (with units)		3655.7 Vehicle Miles	
NO. OPERATING DAYS		87 days	Days
NO. OPERATING HOURS PER DAY		24 hours	Hours
DAILY THRUPUT (with units) = Thruput, days		NA	per day
HAP EMISSION FACTOR (with units) = EF			
Emission Factor source ¹	Control Efficiency basis ²		
HAP CONTROL DEVICE CODE ³			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		%	%
HAP (- -) EMISSIONS ⁵		tons per yr	lbs per day
HAP EMISSION FACTOR (with units) = EF			
Emission Factor source ¹	Control Efficiency basis ²		
HAP CONTROL DEVICE CODE ³			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		%	%
HAP (- -) EMISSIONS ⁵		tons per yr	lbs per day
HAP EMISSION FACTOR (with units) = EF			
Emission Factor source ¹	Control Efficiency basis ²		
HAP CONTROL DEVICE CODE ³			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		%	%
HAP (- -) EMISSIONS ⁵		tons per yr	lbs per day
HAP EMISSION FACTOR (with units) = EF			
Emission Factor source ¹	Control Efficiency basis ²		
HAP CONTROL DEVICE CODE ³			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		%	%
HAP (- -) EMISSIONS ⁵		tons per yr	lbs per day
HAP EMISSION FACTOR (with units) = EF			
Emission Factor source ¹	Control Efficiency basis ²		
HAP CONTROL DEVICE CODE ³			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		%	%
HAP (- -) EMISSIONS ⁵		tons per yr	lbs per day
HAP EMISSION FACTOR (with units) = EF			
Emission Factor source ¹	Control Efficiency basis ²		
HAP CONTROL DEVICE CODE ³			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		%	%
HAP (- -) EMISSIONS ⁵		tons per yr	lbs per day
HAP EMISSION FACTOR (with units) = EF			
Emission Factor source ¹	Control Efficiency basis ²		
HAP CONTROL DEVICE CODE ³			
Avg. HAP CONTROL EFFICIENCY ⁴ = CE		%	%
HAP (- -) EMISSIONS ⁵		tons per yr	lbs per day

1. AP-42; CEMS; ST = Stack test; F = Federal factor (EPA standard factor); O = Other (describe on separate sheet; use subject to DEQ approval)

2. A = Tested (by EPA Reference Method); B = Test (Other); C = Material Balance; D = Design; O = Other (describe on separate sheet)

3. See three digit device control codes listed in appendix

4. Note control efficiency will be zero if there is no control device OR the emission factor accounts for controls (i.e. EF is identified to be "with controls")

5. Annual Emissions = ANNUAL THRUPUT X EF X FP X (1/2000) X (100 - CE)/100; Ozone Emissions = DAILY THRUPUT X EF X FP X (100 - CE)/100

**2005 Annual Emissions Calculations
Battle Creek Landfill**

Calculated by: DW
Checked by: MAK

The following parameters and values are utilized in these computations:

General Information

1. LFG generation rate (@ 50 % CH ₄)=	820.0	cfm [see Table 1]
2. VOC generation rate =	12.0	tpy [see Table 1]
3. Total residual sulfur (TRS) in LFG=	46.9	ppmv [AP-42]

Note: Since no LFG system has been installed, all emission are fugitive emissions.

Step 1. Total Reduced Sulfur (TRS) Emissions

The emission of total reduced sulfur (TRS) is estimated using the EPA's AP-42 method.

First, calculate the volume flow of TRS for the landfill.

$$\begin{aligned}
 \text{TRS volume flow} &= (\text{LFG generation rate}) \times (\text{TRS concentration}) \\
 &= (820 \text{ scfm}) \times (46.9 \text{ ppmv} / 1 \times 10^6) \text{ scfm of TRS} \\
 &= 0.03846 \text{ scfm of TRS} \\
 &= 572.46 \text{ m}^3/\text{yr of TRS}
 \end{aligned}$$

where:

LFG generation rate	820.0	scfm
TRS concentration	46.9	ppmv (AP-42)

Next, calculate the mass flow rate of TRS using AP-42 equation 2-4(4). These emission are

$$\begin{aligned}
 \text{TRS mass flow} &= [(\text{TRS volume flow}) \times (32 \text{ g/mol})] / [(8.205 \times 10^{-5}) \times (1000 \text{ g/kg}) \times (298 \text{ K})] \\
 &= [(572.46 \text{ m}^3/\text{yr}) \times (32 \text{ g/mol})] / [(8.205 \times 10^{-5}) \times (1000 \text{ g/kg}) \times (298 \text{ K})] \\
 &= 749.20 \text{ kg/yr of sulfur} \\
 &= \mathbf{0.8 \text{ tpy of sulfur}}
 \end{aligned}$$

where:

where,	
32 g/mol is the molecular weight of sulfur	
8.205×10^{-5} is the ideal gas conversion factor	
298 K is the assumed temperature of the LFG (equivalent to 25 deg	
TRS volume flow (m ³ /yr)	572.46

Step 2. Hazardous Air Pollutant (HAP) Emissions

The emission of HAPs from the landfill (as a fugitive emission) is estimated using the the LFG generation rate from the LFG, Model (Table 1) and the concentration of the HAPs (see Table 2 for assumptions).

The attached Table 2 presents a summary of the emissions for the HAPs.

The following is a sample calculation for the emission of the HAP **toluene** - the emission of the other HAPs was completed in a similar manner.

First, calculate the toluene volumetric flow rate using AP-42 equation 2-4(3)

* The concentration of toluene is assumed to be 25.405 ppmv

$$\begin{aligned}
 &= (\text{LFG generation rate, cfm}) \times (25.405 \text{ ppm}) / (1,000,000) \times (1 \text{ m}^3/35.3 \text{ ft}^3) \times (365 \text{ days/yr}) \times (1440 \text{ min/yr}) \\
 &= 310.18 \text{ m}^3 \text{ toluene/yr}
 \end{aligned}$$

where:

LFG generation rate is converted from cfm to cubic meters per year
and LFG generation rate (cfm) = 820.00

**2005 Annual Emissions Calculations
Battle Creek Landfill**

Calculated by: DW
Checked by: MAK

Next, calculate the mass flow of toluene generated using AP-42 equation 2-4(4)

$$= (\text{toluene volume flow}) * (92.13 \text{ g/mol}) / [(8.205 \times 10^{-5}) * (1000 \text{ g/kg}) * (298 \text{ K})]$$

$$= 1,168.7 \text{ kg toluene/yr}$$

where:

133.42 g/mol is the molecular weight of 1,1,1-trichloroethane

8.205×10^{-5} is the ideal gas conversion factor

298 K is the assumed temperature of the LFG (equivalent to 25 deg C)

and toluene volume (m³/yr) = 310.18

Finally, calculate the uncollected landfill emission of toluene (fugitive emissions)

$$= (\text{toluene mass generation rate, kg}) * (1 \text{ ton} / 908 \text{ kg})$$

$$= 1.3 \text{ tons of toluene fugitive landfill emissions}$$

Step 3. Fugitive Dust Emissions

Fugitive dust emissions are associated with landfill traffic. The roadway at Battle Creek is paved up to and just past the maintenance building. Operational standards are that an on-site water truck waters and cleans the entrance and gravel roads daily to eliminate dust emissions from the traffic. The paved road is swept as needed to remove dust.

Disposal Traffic for a Typical 75-80 Ton/Day of Waste Landfilled

	Roll-offs	Packers	Pick-ups/Cars
One-way Daily Trips	8.0	3.0	50.0
Weight (tons) w/Waste	20.0	28.0	3.1
Weight (tons) Empty	15.8	19.9	2.8
Average Weight	17.9	24.0	2.9

Pick-ups and cars only drive on PAVED roadway.

	Paved	Unpaved
Average Vehicle Weight	5.92	19.55

[normalized weight based on # daily trips]

Length of paved road section =	1400 feet	
Length of unpaved road section =	2320 feet	[from end of pavement to Cell 8]
Paved VMT/Day =	32.35 miles/day	[assumes each vehicle completes 2-way trip]
Unpaved VMT/Day =	9.67 miles/day	[assumes each vehicle completes 2-way trip]
# of operating days in 2005 =	87 days	[6 days/week from 9/22/05 to 12/31/05]

PAVED ROADWAY EMISSIONS

Per AP-42, Section 13.2.1 (dated 12/03), the particulate emissions from a paved road, per vehicle mile traveled are estimated as:

$$E_{\text{ext}} = [k * (sL/2)^{0.65} * (W/3)^{1.5}] * (1 - P/4N)$$

where,

E_{ext} = annual or other long-term average emission factor, lb/vehicle mile traveled (VMT)

k = particle size multiplier for particle size range, lb/VMT

per Table 13.2-1.1, k=0.0040 lb/VMT for PM-2.5, and 0.016 lb/VMT for PM-10

sL = road surface silt loading, g/m²

per Table 13.2-1-4, mean sL for MSW Landfills = 7.4 g/m²

W = average weight (tons) of the vehicles traveling the road

P = number of "wet" days with at least 0.01 inches of precipitation during the averaging period

per Figure 13.2-1-2, P ~ 140 days per year for Western Virginia

N = number of days in the averaging period (365 for annual)

**2005 Annual Emissions Calculations
Battle Creek Landfill**

Calculated by: DW
Checked by: MAK

First, estimate PM-2.5 emissions:

$$E_{\text{ext-PM-2.5}} = [0.0040 * (7.4/2)^{0.65} * (5.92/3)^{1.5}] * [1 - 140/(4*365)]$$

$$= 0.02 \text{ lb PM-2.5/VMT/day}$$

$$2005 \text{ fugitive PM-2.5 dust emissions from paved roadway} = E_{\text{ext-PM-2.5}} * \text{VMT} / (2000 \text{ lb/ton}) * \# \text{ operating days}$$

$$= 0.03 \text{ tons PM-2.5}$$

Next, estimate PM-10 emissions:

$$E_{\text{ext-PM-10}} = [0.016 * (7.4/2)^{0.65} * (5.92/3)^{1.5}] * [1 - 140/(4*365)]$$

$$= 0.09 \text{ lb PM-10/VMT/day}$$

$$2005 \text{ fugitive PM-10 dust emissions from paved roadway} = E_{\text{ext-PM-10}} * \text{VMT} / (2000 \text{ lb/ton}) * \# \text{ operating days}$$

$$= 0.13 \text{ tons PM-10}$$

UNPAVED ROADWAY EMISSIONS

Per AP-42, Section 13.2.2 (dated 12/03), the particulate emissions from an unpaved road, per vehicle mile traveled are estimated as:

$$E_{\text{ext}} = [k * (s/12)^a * (W/3)^b] * [(365 - P)/365]$$

where,

E_{ext} = annual size-specific emission factor extrapolated for natural mitigation, lb/VMT

k, a, b = empirical constants

k=0.23 for PM-2.5 and 1.5 for PM-10

a = 0.9 for PM-2.5 and PM-10

b = 0.45 for PM-2.5 and PM-10

s = surface material silt content (%)

per Table 13.2.2-1, the mean s for MSW landfills is 6.4%

W = mean vehicle weight (tons)

P = number of days in a year with at least 0.01 inches of precipitation

per Figure 13.2.2-1, P ~ 140 days per year for Western Virginia

First, estimate PM-2.5 emissions:

$$E_{\text{ext-PM-2.5}} = [0.23 * (6.4/12)^{0.9} * (19.55/3)^{0.45}] * [(365-140)/365]$$

$$= 0.19 \text{ lb PM2.5/VMT/day}$$

$$2005 \text{ fugitive PM-2.5 dust emissions from unpaved roadway} = E_{\text{ext-PM-2.5}} * \text{VMT} / (2000 \text{ lb/ton}) * \# \text{ operating days}$$

$$= 0.08 \text{ tons PM-2.5}$$

Next, estimate PM-10 emissions:

$$E_{\text{ext-PM-10}} = [1.5 * (6.4/12)^{0.9} * (19.55/3)^{0.45}] * [(365-140)/365]$$

$$= 1.22 \text{ lb PM2.5/VMT}$$

$$2005 \text{ fugitive PM-10 dust emissions from unpaved roadway} = E_{\text{ext-PM-10}} * \text{VMT} / (2000 \text{ lb/ton}) * \# \text{ operating days}$$

$$= 0.51 \text{ tons PM-10}$$

**2005 Annual Emissions Calculations
Battle Creek Landfill**

Calculated by: DW
Checked by: MAK

SUMMARY OF PM EMISSIONS (tons)

	Paved	Unpaved	Total
PM-2.5	0.03	0.08	0.1
PM-10	0.13	0.51	0.6

TABLE 1. PROJECTED LFG AND NMOC GENERATION RATES
Battle Creek Landfill, County of Page, Virginia

Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	Disposal Rate (Mg/yr)	Refuse In-Place (Mg)	Methane Generation Rates (m ³ /yr)	LFG Generation Rates (cfm)	NMOC Generation Rates (tons/yr)	NMOC Generation Rates (Mg/yr)	VOC Generation Rate (tons/yr)
1999	51,498	0	46,718	0	0.000E+00	0	0	0	0
2000	60,098	51,498	54,520	46,718	3.971E+05	53	2	2	1
2001	90,624	111,596	82,213	101,238	8.412E+05	113	4	4	2
2002	242,918	202,220	220,372	183,451	1.499E+06	201	8	7	3
2003	368,019	445,138	333,861	403,822	3.299E+06	443	17	15	7
2004	53,991	813,157	48,980	737,684	5.976E+06	803	31	28	12
2005	6,246	867,148	5,666	786,663	6.101E+06	820	31	28	12
2006	0	873,394	0	792,330	5.851E+06	786	30	27	12
2007	0	873,394	0	792,330	5.566E+06	748	29	26	11
2008	0	873,394	0	792,330	5.295E+06	711	27	25	11
2009	0	873,394	0	792,330	5.036E+06	677	26	23	10
2010	0	873,394	0	792,330	4.791E+06	644	25	22	10
2011	0	873,394	0	792,330	4.557E+06	612	23	21	9
2012	0	873,394	0	792,330	4.335E+06	583	22	20	9
2013	0	873,394	0	792,330	4.123E+06	554	21	19	8
2014	0	873,394	0	792,330	3.922E+06	527	20	18	8
2015	0	873,394	0	792,330	3.731E+06	501	19	17	7
2016	0	873,394	0	792,330	3.549E+06	477	18	17	7
2017	0	873,394	0	792,330	3.376E+06	454	17	16	7
2018	0	873,394	0	792,330	3.211E+06	432	16	15	6
2019	0	873,394	0	792,330	3.055E+06	410	16	14	6
2020	0	873,394	0	792,330	2.906E+06	390	15	14	6
2021	0	873,394	0	792,330	2.764E+06	371	14	13	6
2022	0	873,394	0	792,330	2.629E+06	353	14	12	5
2023	0	873,394	0	792,330	2.501E+06	336	13	12	5
2024	0	873,394	0	792,330	2.379E+06	320	12	11	5
2025	0	873,394	0	792,330	2.263E+06	304	12	11	5
2026	0	873,394	0	792,330	2.153E+06	289	11	10	4
2027	0	873,394	0	792,330	2.048E+06	275	11	10	4
2028	0	873,394	0	792,330	1.948E+06	262	10	9	4
2029	0	873,394	0	792,330	1.853E+06	249	10	9	4
2030	0	873,394	0	792,330	1.762E+06	237	9	8	4
2031	0	873,394	0	792,330	1.676E+06	225	9	8	3
2032	0	873,394	0	792,330	1.595E+06	214	8	7	3
2033	0	873,394	0	792,330	1.517E+06	204	8	7	3
2034	0	873,394	0	792,330	1.443E+06	194	7	7	3
2035	0	873,394	0	792,330	1.373E+06	184	7	6	3
2036	0	873,394	0	792,330	1.306E+06	175	7	6	3
2037	0	873,394	0	792,330	1.242E+06	167	6	6	2
2038	0	873,394	0	792,330	1.181E+06	159	6	6	2
2039	0	873,394	0	792,330	1.124E+06	151	6	5	2
2040	0	873,394	0	792,330	1.069E+06	144	5	5	2

ESTIMATED NMOC CONCENTRATION IN LFG:	650 ppmv	[Site-specific value based on June 2005 Tier II Testing]
ASSUMED METHANE CONTENT OF LFG:	50%	
SELECTED DECAY RATE CONSTANT:	0.05	[Per Stationary Source Permit #81380, Condition #7]
SELECTED ULTIMATE METHANE RECOVERY RATE:	5,446.3 ft ³ /ton	
METRIC EQUIVALENT:	170 cu m/Mg	[Per Stationary Source Permit #81380, Condition #7]

Note:

1. Per AP-42, Table 2.4-2, VOC's assumed to be 39% of NMOC emissions.

**TABLE 2. 2005 ESTIMATED HAZARDOUS AIR POLLUTANT (HAPs) EMISSIONS
BATTLE CREEK LANDFILL
COUNTY OF PAGE, VIRGINIA**

Total LFG Generation (m3/yr) =
Total LFG Generation (cfm) =

1.2202E+07 [Table 1]
820 [Table 1]

HAP ¹	CAS Number	MW	Conc. ² (ppmv)	Fugitive Emissions (lb/yr)	Fugitive Emissions (ton/yr)
1,1,1-trichloroethane (methyl chloroform) ⁶	71-55-6	133.42	0.168	24.6	0.0
1,1,2,2-tetrachloroethane	127-18-4	167.85	0.005	0.9	0.0
1,1-dichloroethane (ethylidene dichloride)	75-34-3	98.95	0.741	80.6	0.0
1,1-dichloroethene (vinylidene chloride)	75-35-4	96.94	0.092	9.8	0.0
1,2-dichloroethane (ethylene dichloride)	107-06-2	98.95	0.12	13.0	0.0
1,2-dichloropropane (propylene dichloride)	78-87-5	112.99	0.023	2.9	0.0
acrylonitrile	107-13-1	53.06	0.036	2.1	0.0
benzene	71-43-2	78.11	0.972	83.4	0.0
carbon disulfide	75-15-0	76.13	0.221	18.5	0.0
carbon tetrachloride	56-23-5	153.84	0.007	1.2	0.0
carbonyl sulfide	463-58-1	60.07	0.183	12.1	0.0
chlorine ^{3,6}	1782-50-6	35.45	42	1,636.0	0.8
chlorobenzene	108-90-7	112.56	0.227	28.1	0.0
chloroethane (ethyl chloride)	75-00-3	64.52	0.448	31.8	0.0
chloroform (trichloromethane)	67-66-3	119.39	0.01	1.3	0.0
dichlorobenzene ⁴	106-46-7	147	1.448	233.9	0.1
dichloromethane (methylene chloride) ⁶	75-09-2	84.94	3.395	316.9	0.2
ethylbenzene	100-41-4	106.16	6.789	791.9	0.4
hexane	100-54-3	86.18	2.063	195.4	0.1
mercury (total) ⁵	N/A	200.61	0.000292	0.1	0.0
methyl ethyl ketone	78-93-3	72.11	12.694	1,005.8	0.5
methyl isobutyl ketone	141-79-7	100.16	0.75	82.5	0.0
perchloroethylene (tetrachloroethylene) ⁶	127-18-4	165.83	1.193	217.4	0.1
toluene	108-88-3	92.13	25.405	2,571.8	1.3
trichloroethylene (trichloroethene)	79-01-6	131.40	0.681	98.3	0.0
vinyl chloride	75-01-4	62.5	1.077	74.0	0.0
xylene	1330-20-7	106.16	15.582	1,817.6	0.9
TOTAL				9351.8	4.7
TOTAL NON-VOLATILE/NON-PM HAPS ⁶				2194.9	1.1

Notes:

1. HAPs are taken from AP-42 Tables 2.4-1 and 2.4-2. Chlorine is included from AP-42, Section 2.4.4.2 narrative.
2. Unless otherwise noted, concentrations are taken from Waste Industry Air Coalition, Comparison of Recent Landfill Gas Analyses with Historic AP-42 Values, by Huitric R, Sullivan P, Tinker A, dated January 2001. Concentrations used are from Table 2, column WIAC-2.
3. Default chlorine concentration from AP-42, Section 2.4.4.2.
4. Source tests did not indicate whether this compound was the para- or ortho-isomer. The para isomer is a Title III-listed HAP; therefore it is assumed that these emissions are para-dichlorobenzene.
5. The concentration for mercury is from AP-42, Table 2.4-1.
6. Non-volatile and non-particulate HAPs per VDEQ 2005 Emission Statement Form Appendix.

ATTACHMENT C
Minor NSR Permit dated 04/23/2001 as amended 11/20/2006

STATIONARY SOURCE PERMIT TO CONSTRUCT AND OPERATE

**This permit includes designated equipment subject to
New Source Performance Standards (NSPS).**

This permit replaces your permit dated April 23, 2001.

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia
Regulations for the Control and Abatement of Air Pollution,

County of Page – Battle Creek Landfill, Permit #579
219 Landfill Drive
Luray, Virginia 22835
Registration No.: 81380
Plant ID No.: 51-139-0031

is authorized to construct and operate

a municipal solid waste landfill

located at

219 Landfill Drive
Luray, Virginia

in accordance with the Conditions of this permit.

Approved on April 23, 2001
Amendment date November 20, 2006

Sharon G. Foley
Air Permit Manager, Valley Region

Permit consists of 10 pages.
Permit Conditions 1 to 29.

PERMIT CONDITIONS - the regulatory reference or authority for each condition is listed in parentheses () after each condition.

APPLICATION

1. Except as specified in this permit, the permitted facility is to be constructed and operated as represented in the permit applications dated October 19, 2000, April 27, 2006 and October 19, 2006, including supplementary information dated October 11, 2000, November 28, 2000, December 4, 2000, and April 5, 2001. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.
(9 VAC 5-50-390 and 9 VAC 5-80-1210 D)

PROCESS REQUIREMENTS

2. **Equipment List** - Equipment to be constructed at this facility consists of:
 - a municipal solid waste (MSW) landfill with a total capacity not to exceed 2.769 million megagrams of waste.
(9 VAC 5-80-1180 D 3)
3. **Design Capacity** - The design capacity of the MSW landfill shall not exceed 2.769 million megagrams and 3.704 million cubic meters. A change in the design capacity may require a permit to modify and operate.
(9 VAC 5-80-1180)
4. **Landfill Gas (LFG) Collection and Control System: Design and Operational Standards**
The permittee shall install a LFG collection and control system that captures the gas generated within the landfill as required by 40 CFR § 60.752 (b) (2) (ii) (A) or (B) and 40 CFR § 60.752 (b) (2) (iii) within 30 months after the first annual non methane organic compounds (NMOC) emission rate report, required in Condition 15, in which the NMOC emission rate equals or exceeds 50 megagrams per year, unless Tier 2 or Tier 3 sampling demonstrates that the NMOC emission rate is less than 50 megagrams per year.
(9 VAC 5-50-410 and 40 CFR § 60.752 (b))
5. **Pollution Prevention** - Unless otherwise specified, fugitive dust emission controls shall include the following or equivalent as a minimum:
 - a. Dust from grading, cell construction, waste compaction, application of daily cover, wood waste chipping operations, storage piles and traffic areas shall be controlled by wet suppression or equivalent (as approved by the DEQ) control measures.
 - b. All material being stockpiled shall be kept moist to control dust during storage and handling, or covered to minimize emissions.

- c. Dust from haul roads shall be controlled by wet suppression and prompt removal of dried sediment resulting from soil erosion and dirt spilled or tracked onto paved surfaces within the landfill.
- d. Reasonable precautions shall be taken to prevent deposition of dirt on public roads and subsequent dust emissions. Dirt spilled or tracked onto paved surfaces shall be promptly removed to prevent particulate matter from becoming airborne.

(9 VAC 5-50-260 and VAC 5-50-90)

- 6. **Dust Control Plan** - In order to minimize the duration and frequency of excess emissions, the permittee shall implement the DEQ-approved Dust Control Plan which outlines the preventive measures to be implemented for dust control at the landfill. The plan shall include the following as a minimum:

- a. Identification of the personnel responsible for overseeing dust control,
- b. Description and the frequency of measures to be taken to prevent excess emissions from grading, cell construction, waste compaction and daily cover application,
- c. Description and the frequency of measures to be taken to prevent excess emissions from storage piles and stockpiling operations,
- d. Description and the frequency of measures to be taken to prevent dust from haul roads and other unpaved surfaces, and description and the frequency of measures to be taken to prevent deposition of dirt on paved surfaces within the landfills and access roads entering the landfill.

(9 VAC 5-80-1180)

- 7. **Emissions Calculations** - The permittee shall use either of the following equations (Equation 1 or Equation 2) to calculate the annual NMOC emission rate. The default values to be used in both equations are 0.05 per year for k, 170 cubic meters per megagram for L_O, and 4000 parts per million by volume as hexane for C_{NMOC}. If obtained, the site-specific value for C_{NMOC}, as determined by using the procedure specified in Condition 10, and/or the site-specific value for k, as determined by using the procedure specified in Condition 11, shall be used in lieu of the default value for C_{NMOC} and/or k in calculating the NMOC emission rate.

- a. Equation 1 shall be used if the actual year-to-year solid waste acceptance rate is known:

$$M_{NMOC} = \sum_{i=1}^n 2kL_O M_i (e^{-kt_i}) (C_{NMOC}) (3.6 \times 10^{-9})$$

.....Equation 1

M_{NMOC} = Total NMOC emission rate from the landfill, megagrams per year
 k = methane generation rate constant, year⁻¹
 L_O = methane generation potential, cubic meters per megagram solid waste
 M_i = mass of solid waste in the i^{th} section, megagrams
 t_i = age of the i^{th} section, years
 C_{NMOC} = concentration of NMOC, parts per million by volume as hexane
 3.6×10^{-9} = conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for M_i if documentation of the nature and amount of such wastes is maintained.

- b. Equation 2 shall be used if the actual year-to-year solid waste acceptance rate is unknown:

$$M_{NMOC} = 2L_O R(e^{-kc} - e^{-kt})(C_{NMOC})(3.6 \times 10^{-9})$$

.....Equation 2

M_{NMOC} = mass emission rate of NMOC from the landfill, megagrams per year
 L_O = methane generation potential, cubic meters per megagram solid waste
 R = average annual acceptance rate, megagrams per year
 k = methane generation rate constant, year⁻¹
 t = age of the landfill, years
 C_{NMOC} = concentration of NMOC, parts per million by volume as hexane
 c = time since closure, years (for an active landfill $c = 0$ and $e^{-kc} = 1$)
 3.6×10^{-9} = conversion factor

The mass of nondegradable solid waste may be subtracted from the average annual acceptance rate when calculating a value for R , if documentation of the nature and amount of such wastes is maintained.

(9 VAC 5-50-410 and 40 CFR § 60.754 (a) (1))

OPERATING/ EMISSION LIMITATIONS

8. **Visible Emission Limit** - Visible emissions from the facility shall not exceed 20% opacity as determined by EPA Method 9 (reference 40 CFR Part 60, Appendix A), except for one six-minute period in any one hour which shall not exceed 30% opacity.
(9 VAC 5-50-1180)
9. **Operation of Landfill** - Except where this permit is more restrictive than the applicable requirement, the MSW landfill as described in Condition 2 shall be operated in compliance with the requirements of 40 CFR 60, Subpart WWW.
(9 VAC 5-50-400 and 9 VAC 5-50-410)

TESTING

10. **Tier 2 Testing** - When determining the Tier 2 site-specific NMOC concentration, the permittee shall use the following sampling procedure. The permittee shall install at least two sample probes per hectare of landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required. The sample probes should be located to avoid known areas of nondegradable solid waste. The permittee shall collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using Method 25 or 25C of Appendix A of 40 CFR Part 60 or Method 18 of Appendix A of 40 CFR Part 60. If using Method 18 of Appendix A of 40 CFR Part 60, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42). If composite sampling is used, equal volumes shall be taken from each sample probe. If more than the required number of samples are taken, all samples shall be used in the analysis. The permittee shall divide the NMOC concentration from Method 25 or 25C of Appendix A of 40 CFR Part 60 by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.
(9 VAC 5-50-410 and 40 CFR § 60.754 (a) (3))
11. **Tier 3 Testing**— When determining the Tier 3 site-specific methane generation rate constant, the permittee shall use the procedure provided in 40 CFR Part 60, Appendix A, Method 2E.
(9 VAC 5-50-410 and 40 CFR § 60.754 (a) (4))
12. **Alternate Method Testing** – The permittee may use other methods to determine the NMOC concentration or a site-specific k as an alternative to the methods required in Conditions 10 and 11 if the method has been approved by the EPA.
(9 VAC 5-50-410 and 40 CFR § 60.754 (a) (5))

CONTINUING COMPLIANCE DETERMINATION

13. **Visual Survey** - At least daily, the permittee shall visually survey the trafficable roads at the site and landfill activities for any sources of excessive fugitive emissions. For the purpose of this survey, excessive emissions are considered to be any visible emissions that leave the facility site boundaries. The presence of excessive fugitive emissions shall require further investigation as to the cause of the emissions and timely corrective action shall be taken. If water is used to control the fugitive dust emissions, the permittee shall take care not to create a water quality problem from surface water runoff. All observations and corrective actions taken shall be logged and recorded.
(9 VAC 5-80-1180)

RECORDS

14. **On Site Records** - The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Valley Region. These records shall include, but are not limited to:

- a. Readily accessible, on-site records of the maximum design capacity.
- b. Annual calculated mass emission rate of NMOC from the landfill.
- c. The current amount of solid waste in-place.
- d. The year-by-year or average waste acceptance rate.
- e. Site-specific values for C_{NMOC} and k , if obtained.
- f. Age of landfill
- g. Description, location, amount, and placement date of all nondegradable refuse including asbestos and demolition refuse placed in landfill areas, which are excluded from landfill gas estimation.
- h. Installation date and location of all vents and/or gas collection components.
- i. A copy of the DEQ-approved Dust Control Plan
- j. Daily logs of the visual survey of the trafficable roads at the site and landfill activities to include the following:
 - i. The date, time, and name of the person performing each inspection;
 - ii. Whether or not excessive fugitive emissions are observed and the suspected cause of such emissions; and
 - iii. The date, time, and type of corrective actions taken.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.
(9 VAC 5-50-50 and 9 VAC 5-50-410)

REPORTING

15. **Annual NMOC Emission Report** - Not later than April 15 of each year, the permittee must submit an annual NMOC emission rate report to the Director, Valley Region. The NMOC emission rate shall be calculated in accordance with the methodology contained in Condition 7. The report shall include all data, calculations, sample reports and measurements used to estimate the emissions. If the estimated NMOC emission rate as reported in the annual report is less than 50 megagrams per year in each of the next 5 consecutive years, the permittee may elect to submit an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. This estimate shall include the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years for which an NMOC

emission rate is estimated. This estimate shall be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the 5-year estimate, a revised 5-year estimate shall be submitted. The revised estimate shall cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate.

(9 VAC 5-50-410 and 40 CFR § 60.757 (b))

16. Requirements When Reported NMOC Emission Rate > 50 Mg/yr - If the reported NMOC emission rate, in the annual report, is equal to or exceeds 50 megagrams per year, the permittee shall:

- a. Submit a LFG collection and control system design plan as per 40 CFR § 60.752 (b) (2);
or
- b. Within 180 days of the emission rate report in Condition 15, demonstrate, using a site-specific NMOC concentration (Tier 2), that NMOC emissions do not equal or exceed 50 megagrams per year, submit a revised NMOC emission rate report, resume annual NMOC emission rate reporting, and retest the site-specific NMOC concentration every 5 years.

(9 VAC 5-50-410, 40 CFR § 60.752 (b) (2) and 40 CFR § 60.757 (c) (1))

17. Requirements When NMOC Emission Rate > 50 Mg/yr (when using site-specific C_{NMOC}) - If, using a site-specific NMOC concentration, the NMOC emission rate is equal to or exceeds 50 megagrams per year, the permittee shall:

- a. Submit a LFG collection and control system design plan as per 40 CFR § 60.752 (b) (2);
or
- b. Within 1 year of the emission rate report in Condition 15, demonstrate using a site-specific methane generation constant (Tier 3), that NMOC emissions do not equal or exceed 50 megagrams per year, submit a revised NMOC emission rate report and resume annual NMOC emission rate reporting.

(9 VAC 5-50-410, 40 CFR § 60.752 (b) (2) and 40 CFR § 60.757 (c) (2))

18. LFG Collection and Control System Design Plan - The LFG collection and control system design plan required by Condition 16 or Condition 17 shall be submitted to the Director, Valley Region, within one year after submitting the NMOC emission rate report required in Condition 15, reporting an NMOC emission rate which equals or exceeds 50 megagrams per year.

(9 VAC 5-50-410 and 40 CFR § 60.752 (b) (2) (i))

19. **Solid Waste Permit Amendment** - If the permittee is required to install a gas collection and control system according to the provisions of 9 VAC 5-50-410, Subpart WWW, the permittee shall apply for a solid waste permit amendment in accordance with Part VII (9 VAC 20-80-480 et seq.) of 9 VAC 20 Chapter 80 (Solid Waste Management Regulations) (9 VAC 5-80-1180)
20. **Title V Operating Permit Amendment** - If the permittee is required to install a gas collection and control system according to the provisions of 9 VAC 5-50-410, Subpart WWW, the permittee shall apply for a Title V operating permit administrative amendment within 90 days of date of approval of the gas collection and control plan. (9 VAC 5-80-230)
21. **Closure Report** - The permittee shall submit a closure report to the Director, Valley Region, within 30 days of the date the MSW landfill stopped accepting waste. (9 VAC 5-50-410 and 40 CFR § 60.757 (d))
22. **Annual Emission Report for Fee Calculation** - The actual emissions covered by the permit program fees for the preceding year shall be calculated by the owner and submitted to the department by April 15 of each year. The calculations and final amount of emissions are subject to verification and final determination by the department. (9 VAC 5-80-340 C)

GENERAL CONDITIONS

23. **Right of Entry** - The permittee shall allow authorized local, state, and federal representatives, upon the presentation of credentials:
 - a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;
 - b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;
 - c. To inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and
 - d. To sample or test at reasonable times.

For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.
(9 VAC 5-170-130 and 9 VAC 5-80-1180)

24. **Notification for Facility or Control Equipment Malfunction** - The permittee shall furnish notification to the Director, Valley Region, of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour, by

facsimile transmission, telephone or telegraph. Such notification shall be made as soon as practicable but not later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within 14 days of discovery of the malfunction. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify the Director, Valley Region, in writing. (9 VAC 5-20-180 C and 9 VAC 5-80-1180)

25. **Violation of Ambient Air Quality Standard** - The permittee shall, upon request of the DEQ, reduce the level of operation or shut down a facility, as necessary to avoid violating any primary ambient air quality standard and shall not return to normal operation until such time as the ambient air quality standard will not be violated. (9 VAC 5-20-180 I and 9 VAC 5-80-1180)

26. **Permit Suspension/Revocation** - This permit may be suspended or revoked if the permittee:

- a. Knowingly makes material misstatements in the application for this permit or any amendments to it;
- b. Fails to comply with the conditions of this permit;
- c. Fails to comply with any emission standards applicable to the equipment listed in Condition 2;
- d. Causes emissions from this facility which result in violations of, or interferes with the attainment and maintenance of, any ambient air quality standard;
- e. Fails to operate this facility in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect on the date that the application for this permit is submitted;
- f. Fails to construct or operate this facility in accordance with the application for this permit or any amendments to it; or
- g. Allows the permit to become invalid.

(9 VAC 5-80-1210)

27. **Change of Ownership** - In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the Director, Valley Region, of the change of ownership within 30 days of the transfer. (9 VAC 5-80-1240)

28. **Registration/Update** - Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the DEQ or the Board for information to include, as appropriate: process and

production data, changes in control equipment, and operating schedules. Such requests for information from the DEQ will either be in writing or by personal contact. The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.2-3700 through 2.2-3714 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9 VAC 5-170-60 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

(9 VAC 5-170-60 and 9 VAC 5-20-160)

29. **Permit Copy** - The permittee shall keep a copy of this permit on the premises of the facility to which it applies.

(9 VAC 5-80-1180)